

650 V GaN in Aircraft Switch Mode Power Supplies



International aviation electronics supplier AES serves the industry's most trusted names in commercial flying. The company recently disrupted its industry with the release of the first GaN-based switch mode power supplies. These PSUs offer at minimum a 10 percent increase in efficiency versus competitive products, one representing unprecedented cooling functionality. They are currently used in large passenger airplanes such as the Airbus A318-A321 planes, Boeing B767 and B787 VIP planes, and others.

AES' flagship GaN PSU—the 500 W PS250X—is the aviation industry's first passively cooled power supply at 420 W. It uses Transphorm's GaN FETs in a single-phase CCM boost power factor correction (PFC) topology.

The second PSU—the 1200 W PS6120—deploys Transphorm's GaN in a fan-cooled, three-phase CCM boost PFC topology.

Both products are DO-160 compliant—meeting the stringent 25-point+ standard of the Radio Technical Commission for Aeronautics (RTCA). This standard assesses system impact and performance under various external and internal aircraft conditions.

GaN Aircraft PSUs



PS250X



PS6120



PS250X Transphorm GaN benefits:

- > 92% system efficiency at full load (10% more than competition)
- > 0.98 PFC
- 200 mV_{pp} (ripple) nominal at 115 VAC/400 Hz at full load
- PSU weight of 1.4 kg (~3 lbs.)

PS6120 Transphorm GaN benefits:

- > 91.5% system efficiency at full load (11.5% more than competition)
- > 0.98 PFC
- 200 mV_{pp} (ripple) nominal at 115 VAC/400 Hz at full load
- PSU weight of 4.0 kg (~8.8 lbs.)